PATENT SPECIFICATION

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COMPLETE SPECIFICATION.

Improvements in and relating to Window Screens.

I, FRED WALTER CRANE, of Box 612, Dewey, County of Washington, State of Oklahoma, United States of America, Gentleman, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The invention is an improved automatic window screen connected to and operated by the sash so that as the window is opened the screen is automatically placed, and, hence, the window is protected at all times against the entrance of flies and other insects, the invention consisting in the construction, combination and arrangement of devices hereinafter described and claimed.

One object of the invention is to provide an improved flexible window screen which is attached at one end to a roller for winding thereon and unrolling therefrom and is adapted to be connected at the opposite end to a window sash for operation thereby. A further object is to provide improved means for actuating the roller to cause the latter to roll up the screen when the sash is moved to closed position. A further object of the invention is to provide improved means for detachably connecting the outer end of the screen to the sash.

This invention relates to improvements in flexible window screens of the kind which are secured to rollers and are also adapted to be connected to and operated by the sashes so that as the window is opened the screens are automatically placed, and, hence the window is protected at all times against the entrance of flies and other insects.

According to this invention the window screen comprises a roller mounted in the frame at a point beyond one end of a sash which is mounted for longitudinal movement in a window frame, said roller having a gear, a flexible screen attached to the roller, and connected to the sash, a rack on one side of the sash, a gear mounted in the frame having spur teeth engaging the rack and also having bevel teeth, and a shaft also mounted in the frame and having a gear engaging the gear of the roller and also having a gear engaging the bevel teeth of the gear which engages the rack.

The invention will now be described with reference to the accompanying drawings, in which:—

Figure 1 is an elevation, partly in section, of a portion of a window frame provided with sashes and automatically operating screens in accordance with this invention, the sashes being shown in partly opened position.

Figure 2 is a vertical section taken in the plane indicated by the lines *b b* of Figure 1.

Figure 3 is a detail vertical section taken on the lines *a a* of Figure 1.

Figure 4 comprises disconnected perspectives of the parts in the connecting construction between the screens and the sashes.

Referring first to the form of the invention shown in Figures 1, 2 and 3, the window frame 1 is provided with the usual upper sash 2 and the lower sash 3 and each sash is provided in one of its vertical sides with a rack 4. A screen 5 is provided for the upper sash, the screen being flexible and being made preferably of metallic mesh material such for instance as screen wire fabric. This screen has its upper end attached to a roller 6 so that said screen may be wound on and unrolled

[*Price* 1/-]

from said roller, the latter being mounted in bearings 7 and provided at one end with a beveled gear 8.

A gear 9 which has peripheral spurs 10 and is also provided on one side with bevel teeth 11 is mounted on a bracket 12 which is secured between the faces of the window frame at one side thereof, the inner side of the said gear projecting through an opening 13 in one vertical side of the frame and engaging the rack bar of said upper sash so that when the sash is raised or lowered, the said gear is rotated in one direction or the other, according to the movement of the sash.

A vertical shaft 14 is mounted in bearings 15 with which the bracket 12 is provided and is also mounted in a bearing 16 in one of the bearing brackets 7 and has a bevel gear 17 at its upper end which engages the teeth of the beval gear 8 on the under side of the latter, the said shaft being provided near its lower end with a similar gear 18 which engages the bevel teeth of the gear 9 at the lower side of the latter.

The free end of the screen is attached to the upper end of the upper sash. When the upper sash is lowered it draws down the screen, causing the screen to unroll from the roller and to cover the space in the upper portion of the window frame above said upper sash. Owing to the engagement of the gear 9 with the rack bar of the upper sash, said gear rotates when the sash is operated and the shaft 14 being geared to the gear 9 and also to the gear 8 which is carried by the roller 6, said roller is positively turned when the sash is operated in either direction.

Hence, when the sash is raised, the roller is revolved in the required direction to roll up the screen and when the sash is lowered the roller is permitted to turn in the reverse direction so as to unroll the screen as will be understood.

A roller 6^a with a screen 5^a is provided for the lower sash, said roller having a gear 8^a engaged by a gear 17^a on a vertical shaft 14^a which vertical shaft has a gear 18^a that engages the bevel teeth of the gear 9^a which engages the rack bar of said lower sash, each of the said sashes being provided with a screen and operating mechanism therefor identical in construction with that of the screen operating mechanism of the other sash.

The free end of each screen is provided with a stiffening bar 20 which has eyes 21 projecting from one side thereof. Each sash has in its upper or lower side, as the case may be, a groove or channel 22 in the bottom of which is a longitudinally movable locking bar 23 held in place by screws 24 which operate in longitudinal slots 25 with which the locking bar is provided.

Each of the said locking bars has openings 26 to receive the eyes 21 and also has tongues 27 to engage said eyes when the locking bar is moved in one direction and thus cause the locking bar to coact with the eyes in securing the free end of the screen to the sash. It will be understood that by moving the locking bar in the reverse direction the screen will be disconnected from the sash. Each locking bar has an operating arm 28 provided with a finger piece 29 which projects out from and operates in a slot 30 in the sash, a slotted plate 31 being secured on the sash with its slot coincident with that of the slot 30. At 23^a are apertured bars secured to the sashes and against which the bars 20 and the adjacent screen portions are arranged as shown in Figure 2.

To prevent flies from entering the window when either or both of the sashes is in open or partly open position, the upper sash is provided on its lower side with a strip 32 of rubber or the like material which bears against the glass or other sash. It will be understood from the foregoing that when the screens are attached to the sashes they are operated automatically by the movement of the sashes, the screens being rolled up on the rollers when the sashes are closed and unwound from the rollers when and as the sashes are opened or partly opened, and, hence, the window is protected under all conditions against the entrance of insects.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. In combination with a window frame and a sash mounted for longitudinal movement therein, a roller mounted in the frame at a point beyond one end of the sash, said roller having a gear, a flexible screen attached to the roller, and connected to the sash, a rack on one side of the sash, a gear mounted in the frame having spur teeth engaging the rack and also having bevel teeth, and a shaft also mounted in the frame and having a gear engaging the gear of the roller and also having a gear engaging a bevel teeth of the gear which engages the rack.

2. A window screen as claimed in Claim 1, wherein the free end of the flexible screen is provided with a stiffening bar

to which is secured projecting eyes, from one side thereof, adapted to engage with tongues provided in a longitudinally movable locking bar substantially as and for the purpose described.

3. A window screen as claimed in Claim 2 wherein the longitudinally movable locking bar is provided with a projecting finger piece, substantially as and for the purpose described.

4. The improved window screen substantially as described with reference to the accompanying drawings.

Dated this 13th day of October, 1919.

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SHEET 1

Fig. 1.

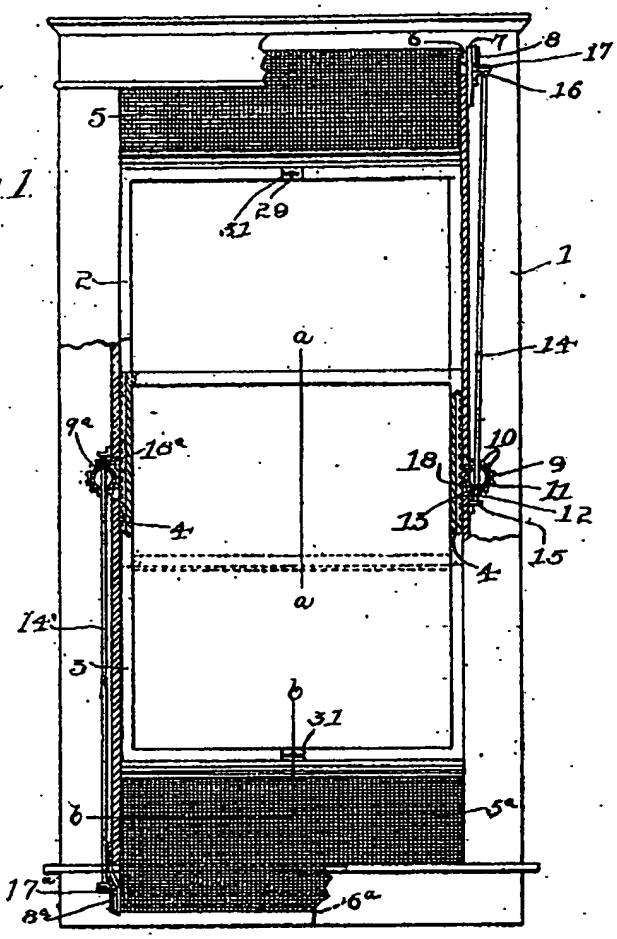


Fig. 3.

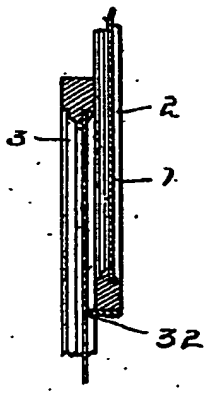


Fig. 2.

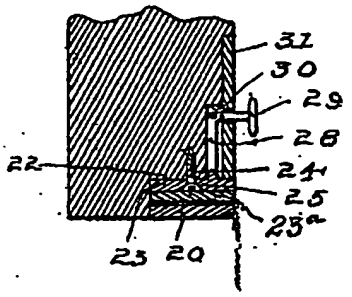
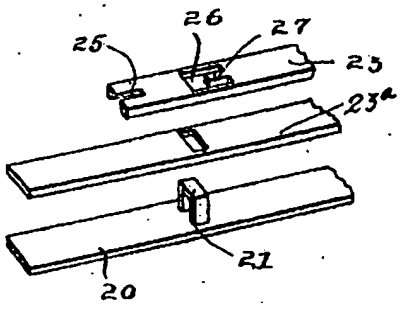


Fig.4.



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